

## The importance of health promotion in the prevention of COVID-19

The importance of health promotion in the prevention of COVID-19

Basem M. M. Salama<sup>1,2</sup>

1 Department of Family and Community Medicine, Faculty of Medicine, Northern Border University, Arar, Saudi Arabia

2 Department of Family and Community Medicine, Faculty of Medicine, Al-Azhar University, Cairo, Egypt

### Abstract

There is an increasing realization that biomedical procedures alone cannot guarantee better health. Health is essentially influenced by factors outside the scope of the health sector, especially economic, social, and political forces. Health promotion is the process of empowering people to increase control over their health and its determinants through health literacy efforts and multisectoral action to increase healthy behaviors. Current evidence revealed that the COVID-19 virus is transmitted through respiratory droplets or contact. Contact route occurs when contaminated hands touch the mucosa of the mouth, nose, or eyes; the virus can also be spread from one surface to another by contaminated hands, which facilitates indirect contact transmission. Previously severe acute respiratory syndrome coronavirus (SARS) and other threatening diseases were eliminated with the application of preventive health measures (to avoid being exposed) without effective treatment or vaccine. In this review, the author reviewed Medline, Google Scholar, EMBASE, Saudi Digital Library, Springerlink, and PubMed database and relevant websites (e.g. [www.who.int](http://www.who.int) and [www.cdc.gov](http://www.cdc.gov)) for all available articles and publication related to health promotion or COVID-19. Conclusion: Promoting precautionary behaviors in the public through personal hygiene and voluntary social distancing will break the chain of infection and prevent the transmission of the COVID-19 (your health in your hand).

### Keywords

Health promotion; Measures; Prevention COVID-19

DOI: 10.4328/ACAM.20189 Received: 2020-04-23 Accepted: 2020-05-11 Published Online: 2020-05-13 Printed: 2020-06-30 Ann Clin Anal Med 2020;11(Suppl 3): S309-314

Corresponding Author: Basem M. M. Salama, Department of Community Medicine, Damietta Faculty of Medicine, Al-Azhar University, 34511, Damnhour, Albeheira Governorate, Egypt.

E-mail: [drbasemsalama@yahoo.com](mailto:drbasemsalama@yahoo.com) P: 00201027383983

Corresponding Author ORCID ID: <https://orcid.org/0000-0001-6639-9673>

## Introduction

The health scenario is situated at unique crossroads as the world is confronting a 'triple burden of diseases' consisting of the incomplete agenda, newly emerging and re-emerging communicable diseases as well as exceptional of non-communicable chronic diseases contributed to many factors such as urbanization globalization increase of trade, ease of global travel, and advanced technologies [1]. There is an increasing realization that biomedical procedures alone cannot guarantee better health. Health is essentially influenced by factors outside the scope of the health sector, especially economic, social, and political forces. These forces mostly shape the situation in which people age, live, grow, and work as well as the systems present in place to deal with health needs ultimately leading to inequities in health within and between countries (WHO: Closing the gap in a generation: health equity through action on the social determinants of health. Final report of the Commission on Social Determinants of Health. Geneva; 2015).

A severe epidemic or pandemic can overwhelm the capacity of outpatient facilities, emergency departments, hospitals, and intensive care units, leading to critical shortages of space, staff, and supplies. So this means that the quality of care cannot be the same as it was before with serious implications for patient outcomes [2]. The impact of the socio-economic environment on public health accounts for 50 percent and physical environments in which people live and work accounts for 10 percent, while biological and genetic factors account for only 15 percent and the reparative work of the health-care delivery system makes up 25 percent. In other words, as much as 60 percent of the variation in population health outcomes can be explained by upstream socio-economic determinants such as income, education, and housing [3].

So the responsibility for the health condition of the community is shifting from the healthcare sector to several socio-economic sectors since lifestyle determines health to the largest extent. It is people who decide to a wide extent about their health, which is really reflected in the proverb "your health in your hands". The evolution of favorable health policy for making decisions beneficial to people's health depends on politicians, government, and self-government administration, and non-governmental organizations [4].

### Objectives of the study

*Ultimate Objective:*

- To advocate for health promotion in diseases prevention.

*Immediate Objectives:*

- Clarify different levels of disease prevention.
- Illustrate health promotion principles, strategies, and approaches.
- Elucidate the importance of health promotion in the prevention of COVID-19 as droplet and contact transmitted disease related to personal sociality.

## Material and Methods

*The study design was a rapid assessment qualitative study through:*

1. Reviewing Medline, Google Scholar, EMBASE, Saudi Digital Library, Springerlink, and PubMed database for all available

articles related to health promotion or COVID-19.

2. Reviewing relevant websites (e.g. www.who.int and www.cdc.gov) and checking the most updated researches.

### Levels of Disease Prevention:

1. Primordial Prevention: It consists of risk factor inhibition targeted towards an entire population through a focus on social and environmental factors. Such measures get promoted through laws and national policy. It addresses the underlying stage of natural disease (laws banning public gathering, mass media education on handwashing, cough etiquette, and social distancing) [6].

2. Primary Prevention: Primary prevention refers to measures aimed at a susceptible population or individuals. Its purpose is health promotion, which fosters wellness in general and thus prevents the disease from ever occurring in nonspecific protection, as well as specific manner against the inception of the disease. Thus, it targets healthy individuals and constitutes of activities that limit or modify risk exposure or promote the immunity of individuals at risk to prevent the progression of the disease in a susceptible individual to subclinical stage (e.g. immunization and wearing personal protective equipment (mask or gloves)) [5].

3. Secondary Prevention: Secondary prevention deals with the latent stage aimed at early disease detection and proper treatment and its target is healthy-appearing individuals with subclinical forms of the disease. It interrupts the disease process and prevents the onset of illness (screening, case finding, and appropriate treatment) [5].

4. Tertiary Prevention: Tertiary prevention focuses both on the symptomatic and outcome stages of a disease to reduce the severity and prevent complications and spread of the infection to others. It attempts to reduce the effects of the disease once established in an individual (disability limitation and rehabilitation) [5].

5. Quaternary Prevention: Measures are taken to detect patients at risk of medical overuse, to protect them from new medical interventions, and to suggest them ethically acceptable interventions [6].

### Health Promotion

Health promotion is defined by the Ottawa Charter, as the process of enabling people to increase control over and to improve their health. It represents a comprehensive approach to bringing about social change in order to improve health and wellbeing (WHO: Health promotion and disease prevention through population-based interventions, including action to address social determinants and health inequity, 2018).

Principles of Health Promotion:

The World Health Organization specified seven key principles of health promotion as follows: a) Empowerment: It enables individuals and communities to assume more power over the personal, socio-economic, and environmental factors that affect their health. b) Participative: It involves those concerned in all stages of planning, implementation, and evaluation. c) Holistic: It fosters physical, mental, social, and spiritual health. e) Inter-sectoral: A collaboration of agencies from relevant sectors. d) Equitable: Health promotion initiatives should be guided by a concern for equity and social justice. e) Sustainable: It should bring about changes that individuals and communities

can maintain once initial funding has ended. f) Multi-strategy: The use of a variety of approaches in combination with one another, including policy development, organizational change, community development, legislation, advocacy, education, and communication [7, 8].

#### **Basic strategies of health promotion:**

1) Advocacy is a “combination of individual and social actions designed to gain political commitment, policy support, social acceptance, and systems support for a particular health goal or programmed to create the essential conditions for health.

2) Enabling means taking action in partnership with individuals or groups to empower them, through the mobilization of human and material resources, to promote and protect their health to achieve their full health potential. The most important goal of all health promotion activities is to support and enable people to keep themselves healthy, as well as their families and friends. The key word here is empowering people.

3) Mediating is a process through which the different interests (personal, social, economic) of individuals and communities, and different sectors (public and private) are reconciled in ways that promote and protect health [9].

#### **Health promotion approaches:**

1. The medical approach is aimed at ridding an individual of a disease in which an individual remains a passive recipient led by experts or professionals. The fundamental value is patient compliance.

2. Behavior change approach, when persons are responsible for their health. It is aimed at changing attitudes and behavior leading ultimately to changes in lifestyle, and ultimately to a healthy lifestyle.

3. The empowerment approach aims to work with individuals or the community to achieve their perceived needs. Health workers advocate for clients, allow for discussion, facilitate for them and give them the freedom to choose, and support clients' decisions based on rational thinking.

4. The social change model addresses inequalities in health based on class, race, disabilities, disease, or gender. This is a top down approach using political action to change the physical and social environment where everyone has equal access to education, information, employment, services and facilities, and has the right to be treated fairly.

5. Societal change approach: It modifies the physical and social environment in order to make it more conducive to good health [10].

#### **Health promotion is broadly categorized into 3 major categories:**

1. Health education is considered the core component of health promotion. Health education activity provides adequate, accurate, and reflective information and knowledge to recipients. Recipients are influenced and able to make their own rational decisions through the empowerment process. 2. Disease Prevention reduces the risk of occurrence of a disease process, illness, injuries, disability, handicap, or some other unwanted events. 3. Health protection consists of regulations, policies, or voluntary practices that are aimed at improving the living and working environment and prevention of ill health. For example, a ban on smoking in public places [11].

#### **Coronavirus disease -19 (COVID-19):**

It is a novel infectious disease that emerged in Wuhan, China, in December 2019 and quickly spread throughout China and to all countries across 6 continents [12]. By the end of January 2020, WHO has characterized the Emergence of COVID-19 as a public health emergency of international concern (PHEIC) or pandemic [13].

It is thought to be primarily transmitted through respiratory droplets generated by coughing and sneezing, and through contact with contaminated surfaces with an incubation period of 1-14 days [12,14]. The majority (80%) of infected patients has developed mild symptoms such as dry cough, sore throat, and fever which spontaneously resolved. In 15% of the affected cases, the disease becomes severe with dyspnea and pneumonia and in 5% of the cases, it becomes critical with respiratory failure, sepsis, or multi-organ failure [15, 16]. People aged 65 years and older and people of all ages with underlying medical conditions such as chronic lung disease, moderate to severe asthma, serious heart conditions, severe obesity, chronic kidney, liver disease, and immunocompromised persons are at a higher risk for severe illness from COVID-19 (WHO: Coronavirus disease (COVID-19) advice for the public).

Previously, severe acute respiratory syndrome (SARS) threatened the world and in the absence of vaccines and antivirals, it is now eradicated with the implementation of preventive health measures. Thus, if there is no effective treatment or vaccine preventing COVID-19, the best prevention is to avoid exposure to the virus and limit the spread of the virus (breaking the chain of transmission) to relieve pressure on the healthcare system and protect lives, health, and jobs of people [17].

#### **Prevention of community transmission and epidemics of COVID-19:**

- Precautionary behaviors: Community transmission and epidemics of COVID-19 can be prevented by increasing the prevalence of precautionary behaviors in the public that impede its spread through the following general measures:

1. Health education: particularly in the long-term, it improves compliance with infection control precautions or reduces rates of infection [18]. All members of society must know and practice measures for self-protection and prevention the spread of infection to others. Public health education is a key strategy to empower people and is carried out through traditional print and broadcast media, as well as social media. Information about COVID-19 should be provided to educate them about the virus, the disease it causes, its manifestation, mode of transmission and how to protect themselves from infection. Education efforts should confirm on social responsibility and right behaviour (messages on frequent handwashing, appropriate use of masks only in case of illness, seeking medical care early and staying home during illness) [18].

2. Avoiding touching the face (your mouth, eyes, and nose). Fingers are constantly in touch with surfaces that may contain viruses. Avoid touching people (e.g., shaking hands, hugging, or kissing) [16-20].

- Frequent perfect hand washing (at the right times and in the right way), particularly after touching surfaces in public, when hands are soiled, before and after touching other individuals, after using the toilet, before eating, and after sneezing or coughing. Encourage handwashing with soap and water for 40-

60 seconds or a hand sanitizer that contains at least 60 percent alcohol for 20 seconds is a reasonable alternative if hands are not visibly dirty [16-20].

- Follow respiratory (cough) hygiene (e.g. covering the cough or sneeze). Sneeze or cough into a tissue and dispose of the tissue immediately in a bin with a lid or sneeze or cough into a flexed elbow when the tissue is not available [16-20].

-Wearing face masks (barrier): WHO recommended using medical masks while providing any care to suspected or confirmed cases. Individuals with respiratory symptoms are advised to use medical masks both in health care and home care settings properly following the infection prevention guidelines. According to this guideline, an individual without respiratory symptoms is not required to wear a medical mask in public places. Proper use and disposal of masks are important to avoid any increase in the risk of transmission (WHO: Advice on the use of masks in the community, during home care and in healthcare settings in the context of the novel coronavirus 2019- nCoV outbreak. 2020).

Surgical face masks could prevent transmission of human coronavirus and influenza virus infections if worn by symptomatic individuals whereas it reduced the detection of coronavirus RNA in both respiratory droplets and aerosols [21]. The cornerstones of infection control and prevention of cross-contamination are hand hygiene, environmental cleaning, barrier precautions and screening (WHO: Guidelines on hand hygiene in health care. 2020)

-Social distancing: Measures taken to reduce social contact between people. People should be encouraged to practice social distancing by staying at home as much as possible and maintaining six feet (two meters) distance from others when they are out of home. Individuals should avoid crowds and close contact with ill persons (WHO: Guidelines on hand hygiene in health care. 2020).

This will help impede the transmission of coronavirus. People should avoid following: a) contact with a person who is displaying symptoms of (COVID-19) (high temperature and cough), b) non-essential use of public transport when possible, c) gatherings in public places (shops, restaurants, etc.), c) gatherings with others (friends and family) and people should work from home, where possible (Public Health England. Guidance on social distancing for everyone in the UK and protecting older people and vulnerable adults. 2020).

- Restricted Movements (self-quarantine): Staying indoors and avoiding contact with other people and social situations as much as possible. Many persons who have been exposed to coronavirus will not develop coronavirus, but they should restrict movements. It is done to stop other people from getting coronavirus. Movements restriction for 14 days if there are no symptoms of coronavirus but there was a close contact with a confirmed case of coronavirus or living in a household with someone who has symptoms of coronavirus [22].

- Self-isolation: Staying at home and completely avoiding contact with other individuals. This includes staying away from other individuals in the home. The person needs to do this if he has any symptoms of Coronavirus to prevent other people in his community from getting infected. This is done when there are symptoms of coronavirus before a person is tested for

coronavirus while waiting for test results or have had a positive test result for coronavirus [22].

-Quarantine is a form of isolation that includes the restriction of movement or separation of healthy persons from the rest of the population who are suspected to carry an infection that is dangerous to society, but are not yet ill with the aim of monitoring their symptoms and ensuring early detection of cases. Quarantined persons are not allowed to leave the building or receive visitors (CDC (Center of Disease Prevention and Control): 2019 Novel coronavirus, Wuhan, China. 2020).

- Avoiding physical contact: keeping at least two-meter distance from each other and avoiding hugs and kissing reduce the risk of flu or coronaviruses infection [23].

Miyaki et al. [24] stated that voluntarily (quarantine) stay at home with receiving full pay when a household member showed symptoms of influenza-like illness until cured leads to a reduced rate of infections. Also, voluntary self-isolation helped in the reduction of influenza transmission in Texas in 2009 [25].

People's willingness to stay at home from work and keep children away from school when ill is an essential component of containing infectious disease outbreak. However not everyone is able to adhere to these measures. People may not engage in stay-at-home behavior due to lack of access to paid sick days [26].

People need to be motivated, or at least not disincentivized, and financial compensation for losses incurred may be seen as an essential component of the wider preventive strategy because it may facilitate adherence to the prescribed public health measures. The Singapore government covered all medical expenses related to testing and treatment of COVID-19 and provided S\$100 per day to compensate for any loss of income while individual quarantined [27].

School closure or workplace social distancing measures (teleworking at home, staggered work hours, spacing workers further apart, and extended holidays) slow transmission, reduce overall attack rates or peak attack rates and delay the epidemic peak and mitigated influenza pandemics. Paid sick leave could improve compliance with a recommendation to stay away from work while ill [28, 29].

Early, rapid, decisive, coordinated, and comprehensive application of social distancing measures are effective in slowing the transmission of the virus (WHO: Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19). 2020).

Shim et al. suggested that among a variety of preventive measures, social distancing was crucial in reducing the spread of the virus [30].

-Environment sanitation: It is a potential medium of transmission of the virus. There is a significant environmental contamination by patients with severe acute respiratory syndrome coronavirus (SARS-CoV-2 through respiratory droplets and fecal shedding was reported) so environmental routine cleaning and disinfection procedures should be implemented to help reduce the spread of COVID-19 virus. The public services and facilities should provide decontaminating reagents for cleaning hands on a routine basis [31-34].

WHO recommended a combination of response measures such as case and contact finding; containment or other measures

that aim to delay the onset of patient surges as possible as; and measures such as public awareness, encouraging personal protective hygiene, preparation of health systems for a surge of severely ill patients, stronger infection prevention and control in health facilities, nursing homes, and long-term care facilities, and postponement or cancellation of largescale public gatherings (WHO: Critical preparedness, readiness and response actions for COVID-19. 2020).

Responding to COVID-19 pandemic, many countries are using a combination of containment and mitigation procedures to delay major surges in patients and levelling the demand for hospital beds, while protecting the most vulnerable groups from infection, including elderly individual and those with comorbidities [35].

Procedures to achieve these goals vary and are depending on national risk assessments that many times take into consideration estimated numbers of patients requiring hospitalization and availability of hospital beds and ventilation support [35].

Most response strategies include varying levels of promotion of public health measures, including respiratory etiquette, handwashing, and social distancing; contact tracing and self-isolation or quarantine; preparation of health systems for a surge of severely ill patients who require special care for isolation, oxygen, and mechanical ventilation; strengthening health care infection prevention and control measures; and postponement or cancellation of large-scale public gatherings [35].

Sweden, Hong Kong's, and Singapore's targeted strategies for fighting COVID-19 may yet succeed and provide a model for other countries. Singapore has been able to control the COVID-19 outbreak and slow down reproduction number below one without major disruption to daily living through a combination of measures including enhanced surveillance system, Border control measures (temperature and health screening of incoming travelers), returning residents and long-term pass holders with travel history to infected countries are subject to a 14-day quarantine and encouraged self-isolation at home and workplace social distancing [27].

The community-level approach in Singapore was focused on social responsibility while life continued as usual with precautions [27]. The government distributed four masks to every household and provided S\$100 per day to compensate for any loss of income while individual quarantined. Mass fever screening through thermal temperature scanners is widely implemented at the entry to public buildings, such as offices, hotels, community centers, and places of worship (Science. Suppress and lift: Hong Kong and Singapore say they have a coronavirus strategy that works. 13 April 2020).

The Swedish government has tried to scope on efforts encouraging healthy behavior and creating social norms rather than obligatory movement restrictions. The government has encouraged each individual to take responsibility for their own health and the health of other people. It encourages people to stay at home if they were experiencing symptoms that are consistent with COVID-19 and banning gatherings of more than 50 people (Sweden Changes Sick Pay Rules to Help Fight Coronavirus. www.thelocal.se. 2020).

China and many other countries have implemented major prevention and control measures including lockdown, quarantine, and travel screenings to control further spread of the virus [16]. There are various factors which influence health promotion, including culture, religion, age, gender, literacy, and access to modern technology. The concept of health and illness changes over time and varies according to the cultural, religious, and spiritual perceptions of the community [36].

#### **Conclusions:**

- Health promotion helps people to change their behavior to move toward a state of optimal health which is the key intervention in the prevention of diseases. COVID-19 virus is thought to be transmitted through respiratory droplets or contact. Consequently, it's prevention depending on precautionary behaviors of the people to break the chain of infection.

- People who decide to a very big extent about their health, which is rightly, reflected in the proverb "your health in your hands".

#### **Scientific Responsibility Statement**

*The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.*

#### **Animal and human rights statement**

*All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.*

#### **Funding: None**

#### **Conflict of interest**

*None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.*

#### **References**

- Dans A, Ng N, Varghese C, Tai ES, Firestone R, Bonita R. The rise of chronic non-communicable diseases in Southeast Asia: time for action. *Lancet*. 2011; 377 (9766):680-9.
- Hick JL, Hanfling D, Wynia MK, Pavia AT. Duty to plan: health care, crisis standards of care, and novel coronavirus SARS-CoV-2. *NAM Perspectives*. 2020; DOI:10.31478/202003b
- Hood C M, Gennuso KP, Swain GR, Catlin BB. County health rankings: Relationships between determinant factors and health outcomes. *Am J Prev Med*. 2016; 50(2):129-35.
- Religioni U, Czerw A. Health promotion in the context of National Health Programme to 2015. *Prog Health Sci*. 2012;2(2): 167-73.
- Kisling LA, M Das J. *Prevention Strategies*. In: Stat Pearls. Treasure Island (FL): Stat Pearls Publishing; 2020.
- Martins C, Godycki-Cwirko M, Heleno B, Brodersen J. Quaternary prevention: reviewing the concept. *Eur J Gen Pract*. 2018;24(1):106-11.
- Buettner-Schmidt K, Lobo ML. Social justice: A concept analysis. *J AdvNurs*. 2012; 68(4):948-58.
- Cutler D, Lleras-Muney A. Education and health: evaluating theories and evidence. *National Bureau of Economic Research*. 2006; DOI: 10.3386/w12352
- Kökény M. Ottawa revisited: 'enable, mediate and advocate'. *Health Promotion International*. 2011; 26(Suppl. 2): ii180-2.
- Janssen BM, Van Regenmortel T, Abma TA. Balancing risk prevention and health promotion: towards a harmonizing approach in care for older people in the community. *Health Care Anal*. 2014;22(1):82-102.
- Tannahill, A. Health promotion: The Tannahill model revisited. *Public Health*. 2009; 123(5):396-9.
- Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A novel coronavirus from patients with pneumonia in China. 2019; *N Engl J Med*. 2020; 382:727-3.
- Anderson RM, Heesterbeek H, Klinkenberg D, Hollingsworth TD. How will country-based mitigation measures influence the course of the COVID-19 epidemic? *Lancet*. 2020;395(10228):931-4.
- Wilson ME, Chen LH. Travelers give wings to novel coronavirus (2019-nCoV). *J Travel Med*. 2020; 27(2) DOI: 10.1093/jtm/taaa015.
- Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 2020;

395(10223):497-506.

16. Carlos WG, Dela Cruz CS, Cao B, Pasnick S, Jamil S. Novel Wuhan (2019-nCoV) coronavirus. *Am J Respir Crit Care Med*. 2020; 201(4). DOI: 10.1164/rccm.2014P7.
17. Adhikari S P, Meng S, Wu YJ, Mao Y P, Ye RX, Wang QZ, et al. Epidemiology, causes, clinical manifestation and diagnosis, prevention and control of coronavirus disease (COVID-19) during the early outbreak period: a scoping review. *Infect Dis Poverty*. 2020, 9(1): 1-12. DOI: 10.1186/s40249-020-00646-x.
18. Ward DJ. The role of education in the prevention and control of infection: a review of the literature. *Nurse Educ Today*. 2011; 31(1):9-17.
19. Lee VJ, Chiew CJ, Khong WX. Interrupting transmission of COVID-19: lessons from containment efforts in Singapore. *J Travel Med*. 2020; DOI: 10.1093/jtm/taaa039
20. Fong MW, Gao H, Wong JY, Xiao J, Shiu E YC, Ryu S, et al. Non pharmaceutical measures for pandemic influenza in non-health care settings social distancing measures. *Emerging Infect Dis J*. 2020; 26(5). DOI: 10.3201/eid2605.190995
21. Leung NH, Chu DK, Shiu EY, Chan KH, McDevitt JJ, Hau BJ, et al. Respiratory virus shedding in exhaled breath and efficacy of face masks. *Nature Medicine*. 2020; DOI: 10.1038/s41591-020-0843-2
22. Wang C, Horby PW, Hayden FG, Gao GF. A novel coronavirus outbreak of global health concern. *Lancet*. 2020;395(10223):470-3.
23. Ahmed F, Zviedrite N, Uzicanin A. Effectiveness of workplace social distancing measures in reducing influenza transmission: a systematic review. *BMC Public Health*. 2018; 18(1):518.
24. Miyaki K, Sakurazawa H, Mikurube H, Nishizaka M, Ando H, Song Y, et al. An effective quarantine measure reduced the total incidence of influenza A H1N1 in the workplace: another way to control the H1N1 flu pandemic. *J Occup Health*. 2011; 53(4):287-92.
25. Teh B, Olsen K, Black J, Cheng AC, Aboltins C, Bull K, et al. Impact of swine influenza and quarantine measures on patients and households during the H1N1/09 pandemic. *Scand J Infect Dis*. 2012; 44(4):289-96.
26. Kumar S, Quinn SC, Kim KH, Daniel LH, Freimuth VS. The impact of workplace policies and other social factors on self-reported influenza-like illness incidence during the 2009 H1N1 pandemic. *Am J Public Health*. 2012; 102(1):134-40.
27. Lee VJ, Chiew CJ, Khong WX. Interrupting transmission of COVID-19: lessons from containment efforts in Singapore. *J Travel Med*. 2020; DOI: 10.1093/jtm/taaa039.
28. Asfaw A, Rosa R, Pana-Cryan R. Potential economic benefits of paid sick leave in reducing absenteeism related to the spread of influenza-like illness. *J Occup Environ Med*. 2017; 59(59):822-9.
29. Piper K, Youk A, James AE III, Kumar S. Paid sick days and stay-at-home behavior for influenza. *PLoS One*. 2017;12. DOI:10.1371/journal.pone.0170698
30. Shim E, Tariq A, Choi W, Lee Y, Chowell G. Transmission potential and severity of COVID-19 in South Korea. *Int J Infect Dis*. 2020; 93:339-44. DOI: 10.1016/j.ijid.2020.03.031
31. Ong SW, Tan YK, Chia PY, Lee TH, Ng OT, Wong MS, et al. Air, surface environmental, and personal protective equipment contamination by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) from a symptomatic patient. *JAMA*. 2020; 323(16):1610-12. DOI:10.1001/jama.2020.3227
32. Rothan HA, Byrareddy SN. The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak. *J Autoimmun*. 2020; DOI: 10.1016/j.jaut.2020.102433
33. Kampf G, Todt D, Pfaender S, Steinmann E. Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents. *J Hosp Infect*. 2020; 104(3):246-51.
34. Qualls N, Levitt A, Kanade N, Wright-Jegede N, Dopson S, Biggerstaff M, et al. Community mitigation guidelines to prevent pandemic influenza-United States, 2017. *MMWR Recommendations and Reports*. 2017; 66(1):1.
35. Bedford J, Enria D, Giesecke J, Heymann DL, Ihekweazu C, Kobinger G, et al. COVID-19: towards controlling of a pandemic. *Lancet*. 2020; 395(10229):1015-18.
36. Rice M.E. Effective global health promotion achievements, tools, and strategies used in the Americas over the past decade. *Health Promot Pract*. 2012; 13(3): 313-19.

**How to cite this article:**

Basem M. M. Salama. The importance of health promotion in the prevention of COVID-19. *Ann Clin Anal Med* 2020;11(Suppl 3): S309-314